



## Nucleotide

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☐ 1: AJ310479. Homo sapiens mRNA...[gi:12830376][Links](#)

LOCUS HSA310479 4372 bp mRNA linear PRI 30-MAY-2001  
DEFINITION Homo sapiens mRNA for potassium voltage-gated channel,  
shaker-related subfamily, member 7 (KCNA7 gene).  
ACCESSION AJ310479  
VERSION AJ310479.1 GI:12830376  
KEYWORDS KCNA7 gene; Kv1.7 gene; potassium voltage-gated channel,  
shaker-related subfamily, member\*.  
SOURCE Homo sapiens (human)  
ORGANISM Homo sapiens  
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Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.  
REFERENCE 1  
AUTHORS Kashuba,V.I., Kvasha,S.M., Protopopov,A.I., Gizatullin,R.Z.,  
Rynditch,A.V., Wahlestedt,C., Wasserman,W.W. and Zabarovsky,E.R.  
TITLE Initial isolation and analysis of the human Kv1.7 (KCNA7) gene, a  
member of the voltage-gated potassium channel gene family  
JOURNAL Gene 268 (1-2), 115-122 (2001)  
MEDLINE 21261947  
PUBMED 11368907  
REFERENCE 2 (bases 1 to 4372)  
AUTHORS Kashuba,V.  
TITLE Direct Submission  
JOURNAL Submitted (09-FEB-2001) Kashuba V., Microbiology and Tumorbiology  
Center, Karolinska Institute, Box 280, 171 77, SWEDEN  
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Revised: July 5, 2002.

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Volume 268, Issues 1-2, 2 May 2001, Pages 115-122



doi:10.1016/S0378-1119(01)00423-1

Cite or link using doi

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This Document

**Abstract**[Full Text + Links](#)[PDF \(971 K\)](#)**Initial isolation and analysis of the human *Kv1.7* (*KCNA7*) gene, a member of the voltage-gated potassium channel gene family**

Actions

[E-mail Article](#)Vladimir I. Kashuba<sup>a, b, c, d, 1</sup>, Sergei M. Kvasha<sup>a, c, d, 1</sup>, Alexei I. Protopopov<sup>a, b, d, 1</sup>, Rinat Z. Gizatullin<sup>a</sup>, Alla V. Rynditch<sup>c</sup>, Claes Wahlestedt<sup>a</sup>, Wyeth W. Wasserman<sup>a</sup> and Eugene R. Zabarovsky<sup>a, b, d</sup><sup>a</sup> Center for Genomics Research, Karolinska Institute, Stockholm, 171 77, Sweden<sup>b</sup> Microbiology and Tumor Biology Center, Karolinska Institute, Stockholm, 171 77, Sweden<sup>c</sup> Institute of Molecular Biology and Genetics, Ukrainian Academy of Sciences, Kiev, 252627, Ukraine<sup>d</sup> Engelhardt Institute of Molecular Biology, Russian Academy of Sciences, Moscow, 117984, Russia

Received 5 September 2000; revised 19 February 2001; accepted 1 March 2001. Received by J.L. Slightom. Available online 22 May 2001.


**Abstract**

A novel human potassium channel gene was identified and isolated. The maximal open reading frame encodes a protein of 456 amino acids. The predicted product exhibits 91% amino acid identity to the murine voltage-gated potassium channel protein Kv1.7 (*Kcna7*), which plays an important role in the repolarization of cell membranes. Based on the high similarity, the human gene has been classified as the ortholog of the mouse *Kcna7* and given the name *Kv1.7* (*KCNA7*). A structural prediction identified a pore region characteristic of potassium channels and six membrane-spanning domains. Northern expression analysis revealed the gene is expressed preferentially in skeletal muscle, heart and kidney. However, it is expressed at lower level in other tissues, including liver. A single mRNA isoform was observed, with a size of approximately 4.5 kb. Using fluorescence in situ hybridization, the gene was mapped to chromosomal band 19q13.4 (269.13 cR<sub>3000</sub>). A genomic sequence was identified in the database from this region, and the *KCNA7* gene structure determined. Computational analysis of the genomic sequence reveals the location of a putative promoter and a likely muscle-specific regulatory region. Initial comparison to the published murine *Kcna7* cDNA suggested a different N-terminal sequence for the human protein, however, further analysis suggests that the original mouse sequence contained an error or an unusual polymorphism.

**Author Keywords:** *NotI*-linking clone; Gene structure; Gene mapping

**Abbreviations:** BAC, bacterial artificial chromosome; EST, expressed sequence tag; FISH, fluorescence in situ hybridization; ORF, open reading frame; PCR, polymerase chain reaction; RACE, rapid amplification of cDNA ends

<sup>1</sup> These authors contributed equally to this work.

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**Gene**

Volume 268, Issues 1-2 , 2 May 2001 , Pages 115-122

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DEFINITION shaker-related subfamily, member 7 (KCNA7 gene).
ACCESSION AJ310479.1 GI:12830376
VERSION 1
KEYWORDS KCNA7 gene; Kv1.7; gene; potassium voltage-gated channel,
shaker-related subfamily, member*.
SOURCE human.
ORGANISM Homo sapiens
REFERENCE 1 (bases 1 to 4372)
AUTHORS Kashuba V.I., Kvasha S.M., Protodopov A.I., Gizatullin R.Z.,
Rynditch A.V., Wallestedt C., Wasserman W.W. and Zabarovsky E.R.
TITLE Initial isolation and analysis of the human Kv1.7 (KCNA7) gene, a
member of the voltage-gated potassium channel gene family
JOURNAL Gene 268 (1-2), 115-122 (2001)
MEDLINE 21261947
PUBMED 11368907
REFERENCE 2 (bases 1 to 4372)
AUTHORS Kashuba V.
TITLE Direct Submission
JOURNAL Submitted (09-FEB-2001) Kashuba V., Microbiology and Tumorbiology
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TITLE Direct Submission
JOURNAL Unpublished
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REFERENCE 3 (bases 1 to 157633)
AUTHORS DOE Joint Genome Institute and Stanford Human Genome Center.
TITLE Direct Submission
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REFERENCE 4 (bases 1 to 157633)
AUTHORS DOE Joint Genome Institute and Stanford Human Genome Center.
TITLE Direct Submission
JOURNAL Submitted (03-OCT-2001) DOE Joint Genome Institute, 2800 Mitchell
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